

In re Patent Application of:
FOORE ET AL.
Serial No. 10/767,326
Filing Date: January 29, 2004

In the Claims:

1. (Original) A base station for providing wireless communication of digital signals, the digital signals being communicated in frames using at least one radio frequency channel via Code Division Multiple Access (CDMA) modulated radio signals, the base station comprising:

a wireless transceiver for establishing a communication session over a digital communication path; and

a bandwidth management module connected to said wireless transceiver for allocating at least one code channel within the at least one radio frequency channel for the digital communication path to exchange digital signals during the communication session, and dividing a current frame of digital signals into a plurality of subframes to be transmitted within the at least one code channel;

said wireless transceiver transmitting the plurality of subframes over the digital communication path, and receiving feedback over the digital communication path on the subframes received with errors;

said bandwidth management module adjusting a size of each subframe received with errors to a more efficient subframe size to be retransmitted over the digital communication path.

2. (Original) A base station according to Claim 1 wherein the more efficient subframe sizes are based on at least one of maximum throughput and minimum transmission time.

3. (Original) A base station according to Claim 1 wherein said bandwidth management module determines a ratio of

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the subframes received with errors and subframes received without errors, and uses the ratio when determining the more efficient subframe sizes.

4. (Original) A base station according to Claim 1 wherein said bandwidth management module initially determines a size of each subframe within the current frame based upon a number of subframes received with errors for a previous frame.

5. (Original) A base station according to Claim 1 wherein each subframe includes a position identifier, a data portion, an integrity check sum and a sequence number.

6. (Original) A base station according to Claim 5 wherein a subframe is considered to be received with errors over the digital communications path if the integrity check sum is not correct, the sequence number is missing, or the position identifier is missing.

7. (Original) A base station according to Claim 1 wherein the at least one code channel comprises a plurality of code channels; and wherein said wireless transceiver transmits the plurality of subframes over the plurality of code channels.

8. (Original) A base station according to Claim 1 wherein the digital signals comprise at least one of voice and data signals.

9. (Original) A base station according to Claim 1

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wherein the wireless communication of digital signals is performed with a subscriber unit over the digital communication path.

10. (Original) A base station according to Claim 9 wherein the at least one radio frequency channel comprises:

a first radio frequency channel for establishing a forward code channel between said wireless transceiver and the subscriber unit, with the plurality of subframes being transmitted to the subscriber unit on the forward code channel; and

a second radio frequency channel for establishing a reverse code channel between the subscriber unit and said wireless transceiver, with the feedback on the subframes received with errors being transmitted on the reverse code channel by the subscriber unit.

11. (Original) A subscriber unit for providing wireless communication of digital signals between terminal equipment connected therewith and a digital communication path, the digital signals being communicated in frames using at least one radio frequency channel via Code Division Multiple Access (CDMA) modulated radio signals, the subscriber unit comprising:

a wireless transceiver for establishing a communication session over the digital communication path; and

a bandwidth management module connected to said wireless transceiver for receiving over the digital communication path at least one allocated code channel within the at least one radio frequency channel to exchange digital

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signals during the communication session, said bandwidth management module dividing a current frame of digital signals into a plurality of subframes to be transmitted within the at least one code channel;

 said wireless transceiver transmitting the plurality of subframes over the digital communication path, and receiving feedback over the digital communication path on the subframes received with errors;

 said bandwidth management module adjusting a size of each subframe received with errors to a more efficient subframe size to be retransmitted over the digital communication path.

12. (Original) A subscriber unit according to Claim 11 wherein the more efficient subframe sizes are based on at least one of maximum throughput and minimum transmission time.

13. (Original) A subscriber unit according to Claim 11 wherein said bandwidth management module determines a ratio of the subframes received with errors and subframes received without errors, and uses the ratio when determining the more efficient subframe sizes.

14. (Original) A subscriber unit according to Claim 11 wherein said bandwidth management module initially determines a size of each subframe within the current frame based upon a number of subframes received with errors for a previous frame.

15. (Original) A subscriber unit according to Claim

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11 wherein each subframe includes a position identifier, a data portion, an integrity check sum and a sequence number.

16. (Original) A subscriber unit according to Claim 15 wherein a subframe is received with errors if the integrity check sum is not correct, the sequence number is missing or the position identifier is missing.

17. (Original) A subscriber unit according to Claim 11 wherein the at least one code channel comprises a plurality of code channels; and wherein said wireless transceiver transmits the plurality of subframes over the plurality of code channels.

18. (Original) A subscriber unit according to Claim 11 wherein the digital signals comprise at least one of voice and data signals.

19. (Original) A subscriber unit according to Claim 11 wherein a base station is communicating with the subscriber unit over the digital communication path.

20. (Original) A subscriber unit according to Claim 19 wherein the at least one radio frequency channel comprises:

a first radio frequency channel for establishing a forward code channel between the base station and said wireless transceiver, with the feedback on the subframes received with errors being transmitted on the forward codechannel by the base station; and

a second radio frequency channel for establishing a

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reverse code channel between said wireless transceiver and the base station, with the plurality of subframes being transmitted to the base station on the reverse code channel.

21. (Original) A digital communication system comprising:

a subscriber unit for providing wireless communication of digital signals; and

a base station for establishing a communication session with said subscriber unit over a digital communications path, the digital signals being communicated in frames using at least one radio frequency channel via Code Division Multiple Access (CDMA) modulated radio signals;

said base station allocating at least one code channel within the at least one radio frequency channel for said subscriber unit to exchange digital signals during the communication session, said base station dividing a current frame of digital signals into a plurality of subframes to be transmitted within the at least one code channel, and transmitting the plurality of subframes over the digital communication path to said subscriber unit;

said subscriber unit transmitting feedback on the subframes received with errors to said base station;

said base station adjusting a size of each subframe received with errors to a more efficient subframe size to be retransmitted to said subscriber unit.

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22. (Original) A digital communication system according to Claim 21 wherein the more efficient subframe sizes are based on at least one of maximum throughput and

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minimum transmission time.

23. (Original) A digital communication system according to Claim 21 wherein said base station determines a ratio of the subframes received with errors and subframes received without errors, and uses the ratio when determining the more efficient subframe sizes.

24. (Original) A digital communication system according to Claim 21 wherein said base station initially determines a size of each subframe within the current frame based upon a number of subframes received with errors for a previous frame.

25. (Original) A digital communication system according to Claim 21 wherein each subframe includes a position identifier, a data portion, an integrity check sum and a sequence number.

26. (Original) A digital communication system according to Claim 25 wherein a subframe is considered to be received with errors by said subscriber unit if the integrity check sum is not correct, the sequence number is missing, or the position identifier is missing.

27. (Original) A digital communication system according to Claim 21 wherein the at least one code channel comprises a plurality of code channels; and wherein said base station transmits the plurality of subframes over the plurality of code channels.

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28. (Original) A digital communication system according to Claim 21 wherein the digital signals comprise at least one of voice and data signals.

29. (Original) A digital communication system according to Claim 21 wherein the at least one radio frequency channel comprises:

a first radio frequency channel for establishing a forward code channel between said base station and said subscriber unit, with the plurality of subframes being transmitted to said subscriber unit on the forward code channel; and

a second radio frequency channel for establishing a reverse code channel between said subscriber unit and said base station, with the feedback on the subframes received with errors being transmitted on the reverse code channel by said subscriber unit.

30. (Original) A digital communication system according to Claim 21 wherein the at least one radio frequency channel comprises:

a first radio frequency channel for establishing a reverse code channel between said subscriber unit and said base station, with the plurality of subframes being transmitted to said base station on the reverse code channel; and

a second radio frequency channel for establishing a forward code channel between said base station and said subscriber unit, with the feedback on the subframes received

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with errors being transmitted on the forward code channel by said base station.

31. (New) A base station according to Claim 1 further comprising at least one transmission data queue for accumulating data pending transmission.

32. (New) A base station according to Claim 31 wherein selection of sub-channels is based upon a depth of said at least one transmission data queue.

33. (New) A base station according to Claim 31 wherein said at least one transmission data queue comprises a plurality of transmission data queues, and transmission priority is based on depth of each transmission data queue.

34. (New) A base station according to Claim 31 wherein selection of a sub-channel is based upon a data transfer rate requirement of each transmission data queue.